SECTION 1

PROPOSED PROJECT

1.1 DESCRIPTION OF PURPOSE AND NEED FOR THE PROPOSED PROJECT

Proposed Project Area
The project area includes three segments: I -196 from US-131 to I-96; I-96 from west of Leonard Street to west of Cascade Road; and M-37/M-44 (East Beltline) from M-21 (Fulton Street) through the Knapp Street intersection, in the Grand Rapids Metropolitan Area. Refer to Figure 1.1 for an overview of the project area. These corridors provide primary east/west freeway access between the eastern metro area and downtown Grand Rapids, as well as connections to Holland and I-94 via I-196, and Muskegon and Lansing via I-96.

Project Area Description
This Environmental Assessment (EA) describes the various capacity and geometric improvement options proposed by the Michigan Department of Transportation (MDOT) to I-196, I-96, M-44 and M-37 as well as improving several interchanges within the project area. These proposed improvements are being developed so that they can be coordinated with pavement and bridge reconstruction and rehabilitation projects planned over the next decade, to minimize traffic disruption and user costs.

The existing I-196 segment of the project area is an urban four lane freeway which crosses the Grand River and consists of three local interchanges as well as a junction with I-96. This limited access freeway is the primary east/west route for traffic serving the downtown Grand Rapids area as well as providing east/west access across the metro area interchanging with I-96 and US-131. I-196 ultimately connects with I-94 near Benton Harbor and serves as the primary route between Grand Rapids, Holland and Chicago.

Currently, the I-96 segment in the project area is a four lane freeway (with six lanes between the I-196 Junction, and M-21 interchange). This segment consists of three interchanges in addition to its connection with the termini of the I-96 freeway. The I-196/I-96 and the I-96/M-21 interchanges currently do not include ramps for all directions. The I-96 freeway provides local access for traffic in the northeastern area of Grand Rapids as well as through traffic connecting Muskegon and Lake Michigan with Lansing and Detroit.

The M-44/M-37 (East Beltline) segment of the project is a four lane divided major arterial with controlled access and at-grade intersections. It provides local north/south access to I-96 within the project area on the eastern side of the Grand Rapids metro area, and serves as a state trunkline connecting various communities between Battle Creek and Traverse City.

Figure 1.1 was removed from this electronic document. Please refer back to the webpage table of contents for a link to Figure 1.1.

Purpose of the Proposed Project

The purpose of the proposed improvements to the I-196/I-96 freeway system and M-37/M-44 (East Beltline) is to enhance mobility to the area by increasing capacity, improving access, and enhancing traffic safety. This will be accomplished by upgrading this corridor to conform to current American Association of State Highway and Transportation Officials (AASHTO) design criteria for roadways and bridges. The proposed project will improve traffic flow, mobility, and safety for the users of the system, as well as extend the service life of the highway infrastructure. These improvements will help maintain the efficiency of an important link in the Michigan Interstate System and one that is vital to the economy of the Grand Rapids area. Specific objectives of the proposed project include the following:

- Improve freeway access within the Grand Rapids metro area, and in downtown Grand Rapids, including the developing Life Sciences Corridor, entertainment centers, colleges and universities.
- Replace and rehabilitate deteriorating pavement and bridges.
- Relieve congestion, improve traffic flow, and enhance safety on the I-196/I-96 freeway corridor, trunkline interchanges (M-21/M-44/M-37), the East Beltline, and the connecting surface streets.
- Improve freeway system linkages, and surface street and highway connections.
- Update and modernize the freeway system through modifications which would address current AASHTO design criteria and guidelines for traffic weave lengths, shoulder widths, road and bridge geometrics, and interchange enhancements.
- Enhance mobility within the study area, while minimizing negative environmental, cultural, economic, social and adjacent property impacts.

Need for the Proposed Project

The segments of I-196 and I-96 in the project area were constructed in the 1960s. The M-37/M-44 (East Beltline) segment was reconstructed and widened in the 1970's and 1980's and connects directly to I-96. The service life for many of these facilities has been exceeded and improvements are needed. While appropriate design techniques were used when they were built, the subject freeways are no longer adequate to meet today's transportation needs. In addition, residential and commercial growth in the project area has caused increased traffic demands that now require additional highway capacity to improve traffic flow and safety for the motorists. Factors directly affecting the need for this project include the following:

- Increased traffic congestion and travel delays in the corridor due to employment and population growth in the Grand Rapids metro area.
- Existing geometric deficiencies and deteriorated pavement and bridge conditions.
- Traffic flow problems due to conflicting traffic weaving over several lanes of traffic at the I-196/I-96/ East Beltline interchange area.
- Partial interchanges limit access and mobility at the I-196/I-96 junction and I-96/ M-21 interchanges.
- Inadequate roadway, bridge and shoulder width.
- Traffic flow and safety issues in the project area including: surface street intersection congestion, difficult freeway merge/weave conditions, interchange ramp and freeway mainline traffic congestion, delays, and increased crash rates.

- Traffic congestion, delays, and freeway access problems, especially during peak hours and major events that are associated with downtown redevelopment activities.
- Medical facility access problems and delays due to congestion on the freeway and interchange ramps.

1.2 PROJECT HISTORY AND BACKGROUND

Project History

In the late 1990's MDOT Grand Region began to make plans for major rehabilitation and reconstruction projects along the subject corridor, based on facility age and condition issues. Concurrently, an on-going evaluation and assessment of traffic flow, congestion and safety issues along the freeways in the Grand Rapids area was undertaken to begin developing long-term plans for the system. After replacing the US-131 S-Curve structure in downtown Grand Rapids in 2000, MDOT began to assess needs and develop freeway modernization strategies for the metro area. In June of 2003 MDOT completed the *Conceptual Long Range Master Plan for I-196 and I-96* report that sought to analyze the existing conditions of the structures, pavement and travel conditions and make recommendations that would meet today's needs as well as provide for future growth that was already occurring along the corridor. The report was developed with input from local communities including the Grand Valley Metropolitan Council (GVMC), and the FHWA. GVMC is the Metropolitan Planning Organization (MPO) for the Grand Rapids area.

The report identified various geometric and operational issues, and found that additional capacity was needed to meet the current and future travel needs of the area. Additionally, the report identified the need to address deteriorating roadway segments and bridges, as indicated in the Purpose and Need section of this EA. The plan also recognized the advantages of coordinating capacity and geometric improvements with on-going road and bridge rehabilitation and reconstruction projects. The result of this report was the development of a long-term plan for mainline and interchange improvements that is practical, affordable, and able to be phased for construction in a logical order. The plan also identified preliminary costs and social/environmental impacts. This plan was presented to, and discussed with, the MPO staff and committees. Based on these findings, the decision was made to begin the EA process in 2004.

Traffic and Capacity

The project area currently carries average daily traffic between 50,000 vehicles on M-37/M-44 (East Beltline) south of I-96 and 104,000 vehicles on I-96 between I-196 and the East Beltline. (See Figure 1.2 in the Figures Section) Future traffic volumes were forecasted using the Grand Rapids MPO model sub-set of the MDOT Statewide Model coupled with a review of historical growth in the project area. More detailed existing traffic analysis is available in the *I-196/I/96/M-37/M-44 Traffic Analysis Technical Report* which is available upon request.

The project area provides statewide connections between I-96, US-131 and I-94 as well

as commuter traffic destined for the Grand Rapids central business district and suburban offices in Grand Rapids Township. Traffic congestion occurs in both directions in both the morning and evening peak periods, due to large employment centers throughout the corridor. Commercial traffic varies from six percent on I-196 and M-44/M-37, to eight percent on I-96 in the project area.

Purpose and Need issues related to traffic flow include congestion relief, safety enhancement, freeway access improvement, and enhancement of mobility in the area. A description of the existing traffic flow conditions within the project area, see Figure 1.3 in the Figures Section, includes the following issues related to the Purpose and Need:

- Mainline congestion and unacceptable level of service (LOS), as defined in Appendix A on the I-196 freeway mainline between College Avenue and the Grand River.
- Traffic back-ups from the Ionia, Ottawa, College, and Fuller Avenue interchange ramps onto the I-196 freeway.
- Congested weaving and merging traffic conditions at the I-96/I-196/M-44/M-37 junction areas.
- Partial interchanges or lack of access to M-21 (Fulton Street), I-196 at I-96 freeway junction, and I-196 at US-131BR (Division Avenue)/Ionia Avenue.
- Congested weaving and merging conditions on I-96, between M-21 and Cascade Road.
- Congestion on most interchanges in the project area.
- Existing and projected capacity issues on the East Beltline (M-44/M-37).
- Additional future congestion forecasted within the project area.

Appendix A (Traffic Analysis) provides a description of existing LOS, as well as comparison of traffic conditions between the future Build and No-Build Alternatives. More detailed capacity and LOS analysis for both existing and future traffic is included in Appendix A and the *I-196/I/96/M-37/M-44 Traffic Analysis Technical Report,* available upon request.

Safety

Several segments along I-196, I-96 and the East Beltline (M-37/M-44) have higher than average level of crashes for similar type facilities within the state (four lane freeways and surface highways). In addition to the human and economic losses that result from these crashes, traffic flow is significantly disrupted. Much of the congestion in urban areas is do to traffic incidents which are predominately traffic crashes. Traffic congestion and safety issues are indicated as factors affecting the need for this project in the Purpose and Need section.

The higher-than-average crash rate on I-196 between Ottawa Avenue and College Avenue is partly attributed to the heavy traffic volumes on the segment and peak-hour traffic congestion. Also, the four percent uphill grade on eastbound I-196 on this segment reduces travel speed and capacity, particularly for large trucks, which contributes to rear-end crashes. The higher-than-average crash rate on westbound I-196

between College Avenue and Fuller Avenue is partly attributed to the heavy traffic volumes associated with peak-hour traffic congestion. High levels of rear-end crashes are common on congested freeways.

The higher-than-average crash rate on eastbound I-96 between Leonard Street and I-196 can be attributed to the curvature of this segment, the high number of lane changes associated with the subsequent merge with I-196, and the weave movement needed to exit at M-44. In addition, a higher-than-average crash rate on the East Beltline between M-21 and I-96 is also congestion related. Several interchange ramp termini also have congestion related higher-than-average crash rate.

Relieving congestion, enhancing safety, and improving traffic flow are primary objectives in the project Purpose and Need section of this EA. Various congestion relief and traffic flow counter measures are incorporated into the Preferred Alternative to reduce the potential for crashes in high-crash locations and segments. Counter measures include, but are not limited to the following: weave/merge lanes to increase ramp/freeway merging capacity; additional through capacity to reduce congestion and unexpected traffic back-ups; increased ramp and turning lane storage to separate stopped traffic from through traffic on surface streets and highways; and improved traffic signal operations at interchanges to enhance traffic flow. A more detailed crash analysis is included in Appendix B (Traffic Crash Analysis).

Geometric Design

The I-196 and I-96 freeway systems were designed in the 1960's, and have a number of components that do not meet current AASHTO design guidelines and/or criteria. These include vertical and horizontal clearances under bridges, sight distances on vertical curves, super elevation rates and geometrics on horizontal curves, acceleration and deceleration lane lengths at ramps, shoulder widths and curb and gutter adjacent to freeway travel lanes. These facilities were constructed based on the design guidelines at that time. However, these facilities are 40 years old and the current design guidelines have since changed. Moreover, these bridges are reaching the point where they are in need of major rehabilitation and repair. These facilities continue to deteriorate at an accelerated rate due to increased use and traffic volumes, and will continue to do so without improvements.

As indicated in the Purpose and Need section of the EA, the Preferred Alternative includes making improvements to the existing roadway, bridges and ramps to address age and condition issues, as well as address current and future access, capacity, safety, and traffic flow issues. The roadway and bridges will be designed to meet current AASHTO design criteria during the subsequent design phases for individual projects. Current and future typical cross-sections for the corridor are included in Appendix C (I-196/1-96 and M-37/M-44 Project Maps and Cross Sections).

Bridge Conditions

There are 29 bridges within the project limits. Many of the superstructures are constructed of steel that requires routine maintenance due to weather conditions and the

use of corrosive de-icing materials. The bridges also have shoulders, capacity, vertical and horizontal clearances, etc. that are not consistent with current AASHTO design criteria. Based on age and deterioration of various bridge components, many bridges within the project area are reaching the end of their service life. Several are already planned for major rehabilitation and/or replacement.

Because bridges have a longer service life than the connecting roadway segments, the Preferred Alternative will allow MDOT to improve bridges to address future capacity needs, as well as replace and repair the worn out components. The bridges will be constructed to current AASHTO design criteria and will be aligned to accommodate future roadway widening as needed. This strategy will help to minimize user inconvenience, and allow for more cost effective use of public funds. Improving deteriorated bridges and providing for future capacity needs are also factors in the project Purpose and Need.

1.3 ALTERNATIVES CONSIDERED

No Build
This alternative involves taking no action to improve and add capacity to the I-196, I-96 or M-37/M-44 (East Beltline) segments that were identified in Section 1.1. It includes only routine maintenance, repair, and preservation of the existing system. Routine maintenance and preservation of the roadway and bridges in the project area will not correct all of the geometric and capacity deficiencies identified, nor will it address current AASHTO design criteria. Selection of the no build alternative will have potential negative consequences on the bridges including weight restrictions and structural failures. This alternative will not address the issues presented in the project Purpose and Need. It is the base condition used for comparison with the other alternatives.

Build Alternative – Capacity and Geometric Improvements
This alternative involves adding capacity, improving freeway access, relieving congestion, improving traffic operations and enhancing safety on the I-196/I-96 freeway corridors, the East Beltline, trunk line interchanges (M-21/M-44/M-37, and the I-196/I-96 junction), and the connecting surface streets and highways within the project area. MDOT is proposing to replace and rehabilitate deteriorating pavement and bridges within this corridor along with the improvements identified herein. Capacity improvements are needed to enhance current traffic flow, enhance safety and accommodate future needs, as indicted in the Purpose and Need for the project.

MDOT is proposing the following actions:

- Construct additional weave/merge lanes on I-196 between Ottawa/Ionia Avenues and College Avenue interchanges and between College Avenue and Fuller Avenue interchanges.
- Construct an additional travel lane on I-196 between the Grand River and I-96 junction, and on I-96 between Leonard Street and Cascade Road.
- Separate weave and merge traffic by constructing freeway

collector/distributor routes, adding travel lanes, and/or auxiliary lanes on I-96 from Leonard Street through the I-196 junction, M-44 (East Beltline), M-21 (Fulton Street), and Cascade Road interchange area.

- Construct additional ramps at I-196/Ottawa Avenue, I-96/M-21 and I-196/I-96 interchanges.
- Construct additional travel lanes and intersection improvements (turning lane improvements, signal modifications, etc.) on the East Beltline (M-37/M-44) between Knapp Street and M-21.
- Joint city of Grand Rapids and MDOT improvements on connecting cross-streets and interchanges are also proposed, including Fuller and College Avenue approaches, Division (US-131BR)/Ionia Avenues boulevard proposals, and new off ramp to north bound Division Avenue.

The location and the type of improvements being proposed for the corridor are described in Figure 1.4. More detailed project maps and cross sections can be found in Appendix C.

MDOT is also proposing to rehabilitate, replace and widen, or conduct preventative maintenance on 29 structures along the I-196 corridor. These structures will be designed to accommodate future freeway mainline widening, as indicated in this EA, and will be designed to meet current AASHTO design criteria. The location of the 29 structures and the proposed improvements for each of the structures are shown in Figure 1.4.

By making improvements to the existing corridor along with planned rehabilitation and reconstruction projects, user inconvenience is minimized, construction costs are reduced, minimal right-of-way (ROW) is required, and impacts to the social and natural environment are minimized. The phasing plan can be found in Section 1.4 and Figure 1.4 in the Figures Section.

Alternatives Considered and Dismissed

MDOT considered other alternatives to address the existing deficiencies along I-196, I-96 and M-37/M-44 Corridors and connecting streets. MDOT considered replacing and rehabilitating the deteriorating pavement and bridges without reconstructing and/or improving the roadway. However, after reviewing the 2003 *Conceptual Long Range Master Plan for I-196 and I-96* findings, it was determined that the roadway and bridge systems needed to be improved to address the current and projected traffic demand, planned growth, and downtown redevelopment within the project area. Because improvements are needed to enhance current traffic flow, enhance safety and accommodate future needs, as indicted in the Purpose and Need for the project, the option to replace and rehabilitate the deteriorating pavement and bridges without improvements was dismissed.

Limited Transportation System Management (TSM) improvements were also considered. These include improvements such as adding turning lanes at ramp termini and surface street/highway intersections, extending on/off ramps, etc. TSM options can provide some short-term relief for traffic and safety issues at specific locations. However, TSM options

will not address the existing and projected safety, capacity, and traffic flow issues identified in the project Purpose and Need. TSM options were therefore dismissed as a stand alone alternative. Some TSM elements are included with the Preferred Alternative.

Multi-Modal options were considered during the EA process. The Interurban Transit Partnership of Grand Rapids is in the process of completing a major transit investment study (GT2-Great Transit/Grand Tomorrow). The GT2 study has identified two potential routes and mode choices. The two potential routes are located generally along surface streets east and south of downtown Grand Rapids. The GT2 options still being considered do not directly affect the I-196/I-96 and East Beltline corridors in this EA. The general conclusion of previous MPO travel-demand modeling indicates that transit will not attract the ridership necessary to eliminate the need for freeway capacity improvements. This is based on population density, trip length, travel times, etc. in the Grand Rapids area. The GT2 alternatives will address travel on surface streets and provide enhanced transit service closer to neighborhoods in the study area, as well as contribute to the overall mobility and economic vitality of the metro area. Multi-Modal options were therefore dismissed as a stand alone alternative. Some Multi-Modal elements can be enhanced with the Preferred Alternative, such as: pedestrian access over improved bridges across the freeway, expanding carpool lots adjacent to the freeway, and future express bus service utilizing the added freeway capacity.

Some realignment or relocation of the freeway mainline was considered in some areas. However, due to severe impact on adjacent property, social, environmental and economic impacts, realignment and/or relocation of the freeway segments was dismissed.

1.4 Preferred Alternative and Phasing Plan

The Build Alternative (Capacity and Geometric Improvements) as described in Section 1.3 is the Preferred Alternative. It includes replacing deteriorating bridges and roadway segments, as well as capacity and geometric improvements along I-196, I-96, and the East Beltline (M-37/M-44). This alternative will address existing facility condition and traffic safety issues, as well as provide for future capacity and mobility needs in the Grand Rapids area. The improvements proposed in the Build Alternative will address the current and future issues identified in the project Purpose and Need more effectively than the other options considered.

Construction of these improvements will be phased over a 20 year time-frame as indicated in the GVMC MPO Long Range Transportation Plan. Some bridge rehabilitation and replacement projects on I-196 and I-96 will begin in 2006, and will be constructed to accommodate the long-term capacity needs for the freeway corridors. Major roadway capacity improvements will be phased in over time based on statewide needs, priorities, and funding levels. In general, the following schedule is proposed, based on the MPO LRTP amendment and air quality conformity analysis:

- **2006 to 2009**: Rehabilitation, replacement, and widening of several bridges on I-96 and I-196; pavement rehabilitation and maintenance

activities.

- **2010 to 2015**: Rehabilitation and reconstruction of the I-196 freeway segments between US-131 (Grand River) and Fuller Avenue, and between Fuller Avenue and the I-196/I-96 junction. Weave/merge lanes will be added between Ionia/Ottawa Avenues and College Avenue, and College and Fuller Avenues. Some ramp and bridge improvements will also be included in these areas based on conditions and need.

- **2016 to 2025**: On-going rehabilitation of the roadways and bridges within the project area, including widening bridges as needed to accommodate future mainline capacity improvements. Some minor TSM type improvements may be implemented to address traffic safety issues based on need.
- **2026 to 2030**: Remaining road and bridge reconstruction and capacity improvements will be implemented as described herein, during this time-frame. This includes additional travel lanes on I-196, I-96, the East Beltline, local streets, and connecting interchange improvements.

The total project cost for all improvements included in the Preferred Alternative is $375,000,000. The project costs are discussed in Section 4 of this EA.